INSTALLATION

FT106011/FR106011 Fiber Transmitter and Receiver

Video with Bidirectional Audio, Data, and Contact Closure

C2649M (9/07)

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Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the points where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
14. Apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases shall be placed on the apparatus.
15. **WARNING:** To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
16. Installation should be done only by qualified personnel and conform to all local codes.
17. Unless the unit is specifically marked as a NEMA Type 3, 3R, 3S, 4, 4X, 6, or 6P enclosure, it is designed for indoor use only and it must not be installed where exposed to rain and moisture.
18. Use only installation methods and materials capable of supporting four times the maximum specified load.
19. A CCC-approved power cord must be used to power this equipment when used in China.
20. **CAUTION:** These servicing instructions are for use by qualified service personnel only. To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

The product and/or manual may bear the following marks:

This symbol indicates that dangerous voltage constituting a risk of electric shock is present within this unit.

This symbol indicates that there are important operating and maintenance instructions in the literature accompanying this unit.

CAUTION:
RISK OF ELECTRIC SHOCK. DO NOT OPEN.

Regulatory Notices

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

RADIO AND TELEVISION INTERFERENCE

This equipment has been tested and found to comply with the limits of a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes and Modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commission's rules.

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Product Overview

DESCRIPTION

The FT106011/FR106011 fiber transmitter and receiver provide simultaneous transmission of one unidirectional video channel, two bidirectional audio channels, one bidirectional data channel, and one bidirectional contact closure over one optical fiber (refer to Figure 1).

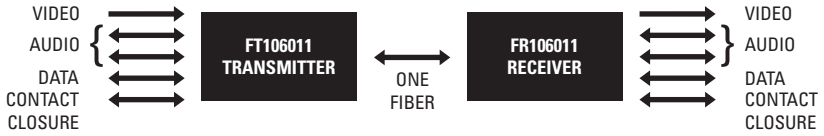


Figure 1. FT106011/FR106011 Video, Audio, Data, and Contact Closure Transmission

Features of the FT106011/FR106011 fiber optic transmission system include the following:

- 10-bit digitally encoded video for high-quality video transmission over a single fiber
- Two bidirectional 24-bit digitally encoded audio channels with user-selectable 600-ohm balanced or 47K-ohm unbalanced input impedance
- Bidirectional data channel with user-selectable RS-232, RS-422, RS-485 (2-wire/4-wire), Manchester, Bi-Phase, and Coaxitron® communication
- Bidirectional contact closure that allows a choice of normally open or normally closed outputs
- Multimode fiber support for distances up to 6 km (3.7 mi)
- Single-mode fiber support for distances up to 38 km (23.6 mi)
- Laser diode for transmission of optical signals

  NOTE: The FT106011 transmitter/FR106011 receiver is a Class 1 laser product that complies with FDA radiation performance standard 21CFR Subchapter J and with IEC 60825-1 Edition 1.2, 2001-08.
- Patent-pending transmission technology allowing Coaxitron control at full-distance capabilities
- Compatible with NTSC, PAL, and SECAM video standards
- Designed to meet NEMA TS 2 and Caltrans traffic signal control equipment standards for ambient operating temperature, mechanical shock and vibration, humidity with condensation, high-line/low-line voltage conditions, and transient voltage protection

  NOTE: Conformal coating is required for operation in environments with relative humidity above 95 percent (condensing).
- No performance adjustments required
- 12 VDC or 24 VAC power supply
- Stand-alone and rack-mountable modular design
- LED indicators for monitoring of signal status, laser status, data activity, contact closure activation, and operating power

MODELS

The FT106011/FR106011 fiber transmitter and receiver consist of the following series of models:

Multimode Models:*

FT106011MSTR	Fiber optic video transmitter with two bidirectional audio channels, one bidirectional data channel, and one bidirectional contact closure; multimode, ST connector
FR106011MSTR	Fiber optic video receiver with two bidirectional audio channels, one bidirectional data channel, and one bidirectional contact closure; multimode, ST connector

Single-Mode Models:*

FT106011SSTR	Fiber optic video transmitter with two bidirectional audio channels, one bidirectional data channel, and one bidirectional contact closure; single-mode, ST connector
FR106011SSTR	Fiber optic video receiver with two bidirectional audio channels, one bidirectional data channel, and one bidirectional contact closure; single-mode, ST connector
FT106011SFCR	Fiber optic video transmitter with two bidirectional audio channels, one bidirectional data channel, and one bidirectional contact closure; single-mode, FC connector
FR106011SFCR	Fiber optic video receiver with two bidirectional audio channels, one bidirectional data channel, and one bidirectional contact closure; single-mode, FC connector

*For conformal coated models, replace the first letter *F* in the model number with the letter *C*. The conformal coated version of FT106011MSTR, for example, is CT106011MSTR.

OPTIONAL ACCESSORIES

The following optional accessories are available:

WM5001-3U	Wall mount base kit for single-width module
WM5001-3UEXP	Wall mount expansion kit for single-width module
RK5000-3U	19-inch rack mount chassis for 14 slots (no power), 3 RUs
RK5000PS-3U	19-inch rack mount chassis for 12 slots with power, 3 RUs
EPS5000-120	External rack power supply, 1 RU, dual 120 W power outputs
RK5001B-3U	Blank filler panel, single width
RK5002B-3U	Blank filler panel, double width
RK5001-1UEXP	Adapter kit that allows a 3 RU single-width fiber module to be used in RK5000PS-5U rack mount chassis

FRONT PANEL

The front panel of the FT106011 transmitter and FR106011 receiver provides LED indicators that allow you to monitor contact closure activation, audio signal status, data activity, video signal status, optical signal/laser status, and operating power (refer to Figure 2).

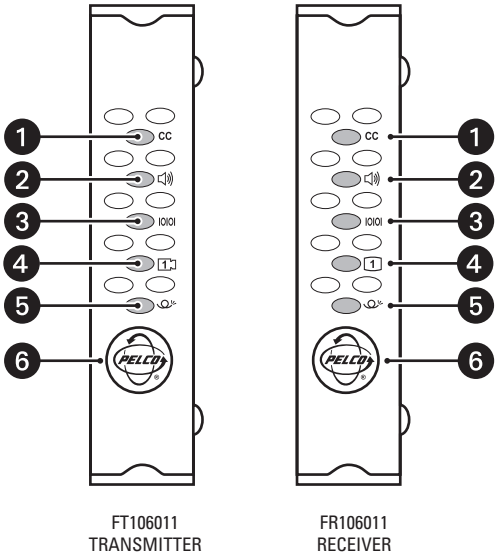


Figure 2. Front Panel of FT106011 Transmitter and FR106011 Receiver

1. CONTACT CLOSURE LED
2. AUDIO PRESENT LED
3. DATA ACTIVITY LED
4. VIDEO PRESENT LED
5. OPTIC FAULT LED (optical signal status/laser status indicator)
6. POWER LED (Pelco badge)

For additional information about the front-panel LEDs, refer to the *Troubleshooting* section.

REAR PANEL

All connections to the FT106011 transmitter and FR106011 receiver are made to the rear panel of the modules (refer to Figure 3).

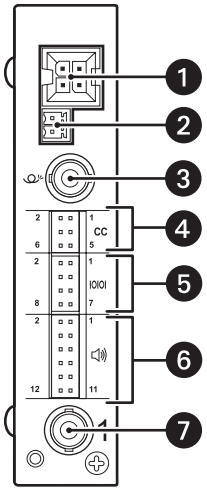


Figure 3. Rear Panel of FT106011 Transmitter and FR106011 Receiver

1. RACK POWER/ALARM CONNECTOR, 4-pin connector for power/alarm connection of rack-mounted module
2. STAND-ALONE POWER CONNECTOR, 2-pin connector for power connection of stand-alone module; removable mating connector with screw terminals (not shown)
3. FIBER OPTIC CONNECTOR, ST or FC (dependent on FT106011/FR106011 model)
4. CONTACT CLOSURE CONNECTOR, 6-pin connector; removable mating connector with tension clamps (not shown)
5. DATA CONNECTOR, 8-pin connector; removable mating connector with tension clamps (not shown)
6. AUDIO CONNECTOR, 12-pin connector; removable mating connector with tension clamps (not shown)
7. BNC CONNECTOR, 75-ohm analog video input (FT106011)/output (FR106011)

For additional information about rear-panel connections, refer to the *Installation* section.

Installation

PACKAGE CONTENTS

The following items are supplied:

1 FT106011 transmitter or FR106011 receiver

1 Regulated switching power supply with four plug adapters (North American, Australian, U.K., and European configurations); 100-240 VAC, 50-60 Hz input, 12 VDC output

1 1 small flat-tip screwdriver

1 Wall clip with two 4-40 x 0.25-inch Phillips pan head screws with lock washers (for attachment of single module to wall)

1 FT106011/FR106011 Fiber Transmitter and Receiver Installation manual (this manual)

SETTING THE AUDIO SIGNAL AND IMPEDANCE MODE

An Audio Select switch, which is a 10-position rotary switch, is provided on the bottom of the FT106011 transmitter and the FR106011 receiver (refer to Figure 5). The Audio Select switch allows you to set the desired audio mode of operation.

With the FT106011 transmitter/FR106011 receiver powered off, set the Audio Select switch to the desired mode of operation using the supplied screwdriver. Table B lists Audio Select switch settings and associated audio modes of operation as indicated on the bottom of the units.

NOTE: If you wish to change the audio mode after the FT106011 transmitter/FR106011 receiver has been powered on, power off the transmitter/receiver, change the audio mode, and then power on the transmitter/receiver again.

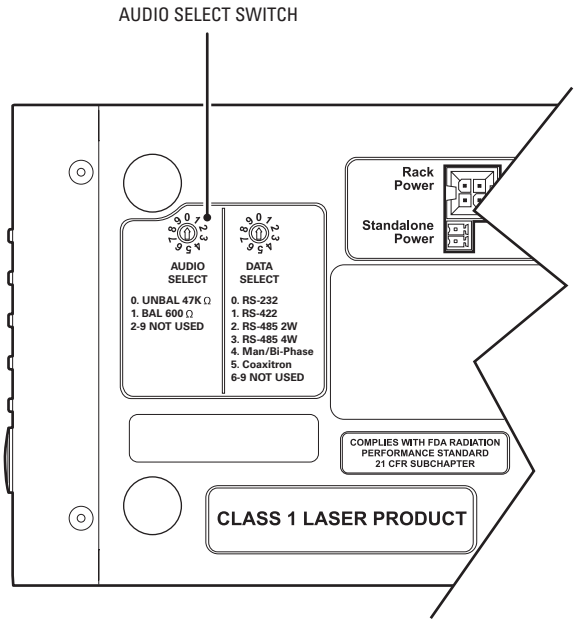


Figure 4. Audio Select Switch

Table A. Audio Select Switch Settings

Switch Setting	Audio Mode
0 (default setting)	UNBAL 47K Ω: Unbalanced audio signals, 47K-ohm input impedance
1	BAL 600 Ω: Balanced audio signals, 600-ohm input impedance
NOTE: Switch settings 2-9 are not used. If switch setting 2-9 is selected, the Audio Present LED lights red.	

SETTING THE DATA COMMUNICATION MODE

A Data Select switch, which is a 10-position rotary switch, is provided on the bottom of the FT106011 transmitter and the FR106011 receiver (refer to Figure 5). The Data Select switch allows you to set the data communication mode required for the transfer of data.

With the FT106011 transmitter/FR106011 receiver powered off, set the Data Select switch to the required data communication mode using the supplied screwdriver. Table B lists Data Mode Select switch settings and associated data communication modes as indicated on the bottom of the units.

Note the following:

- The FT106011 transmitter and the FR106011 receiver allow data translation between RS-232 and RS-422 signal levels. Consequently, the Data Select switch can be set to 0 (RS-232) on the transmitter and to 1 (RS-422) on the receiver. Conversely, the Data Select switch can be set to 1 (RS-422) on the transmitter and to 0 (RS-232) on the receiver.
- If you wish to change the data communication mode setting after the FT106011 transmitter/ FR106011 receiver has been powered on, power off the transmitter/receiver, change the data communication mode setting, and then power on the transmitter/receiver again.

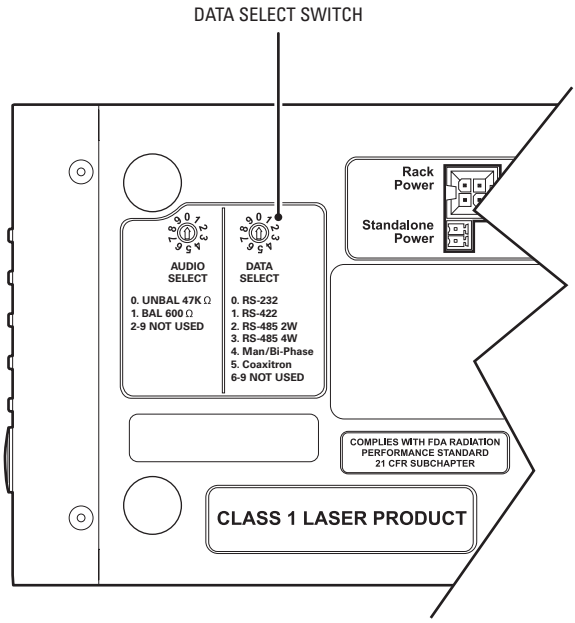


Figure 5. Data Select Switch

Table B. Data Select Switch Settings

Switch Setting	Data Communication Mode
0 (default setting)	RS-232
1	RS-422
2	RS-485 2-Wire
3	RS-485 4-Wire
4	Manchester/Bi-Phase
5	Coaxitron
NOTE: Switch settings 6-9 are not used. If switch setting 6-9 is selected, the Data Activity LED lights red.	

MOUNTING THE TRANSMITTER/RECEIVER

The FT106011 transmitter/FR106011 receiver can be mounted into a rack or can be used as a stand-alone module. As a stand-alone module, the unit can be placed on a desktop or can be mounted to a wall.

MOUNTING THE TRANSMITTER/RECEIVER INTO A RACK

The FT106011 transmitter/FR106011 receiver can be installed into an RK5000 Series rack mount chassis, which can be mounted into an industry-standard 19-inch (48.26 cm) equipment rack. The RK5000 Series rack mount chassis includes the following models:

- **RK5000PS-3U and RK5000-3U:** Designed to accommodate fiber optic modules as follows:
  - The RK5000PS-3U rack mount chassis provides 12 module slots and a power supply.
  - The RK5000-3U rack mount chassis provides 14 module slots (a power supply is not included). Power to the modules can be supplied using the optional external power supply (EPS5000-120).

  For additional information, refer to the RK5000PS-3U/RK5000-3U Fiber Rack Mount Chassis Installation manual.

- **RK5000PS-5U:** Designed to accommodate Endura™ modules but can also accommodate fiber optic modules with the use of the RK5001-1UEXP adapter kit. The RK5001-1UEXP adapter kit is required for installation of the FT106011 transmitter/FR106011 receiver into the RK5000PS-5U chassis.

  For information about the RK5000PS-5U chassis, refer to the RK5000PS-5U Rack Mount Chassis Installation manual.

MOUNTING THE TRANSMITTER/RECEIVER TO A WALL

The FT106011 transmitter/FR106011 receiver can be mounted to a wall in the following ways:

- Using the supplied wall clip for attachment of a single module to a wall. For installation instructions, refer to the *Mounting the Transmitter/Receiver Using the Wall Clip* section.
- Using the optional WM5001 wall mount kits, which are designed for mounting of single-width fiber optic modules. The WM5001-3U base kit allows mounting of a single module to the wall. The WM5001-3UEXP expansion kit allows mounting of an additional module. It is recommended that a maximum of three expansion kits be used with the base kit, allowing a maximum of four single-width modules to be mounted to the wall.

  NOTE: The WM5001 wall mount kits can be used with the WM5002 wall mount kits, which are designed for mounting of double-width fiber optic modules. If mounting a mix of single-width and double-width modules is desired, it is recommended that a maximum of two single-width modules and one double-width module be mounted in combination with one another.

  For mounting instructions using the wall mount kits, refer to the WM5000 Series Wall Mount Kit Installation manual.

Mounting the Transmitter/Receiver Using the Wall Clip

NOTE: Before mounting the FT106011 transmitter/FR106011 receiver to a wall, ensure that there is adequate space at both ends for viewing the front-panel LEDs and for making the various rear-panel cable connections.

To attach the FT106011 transmitter/FR106011 receiver to a wall using the supplied wall clip, refer to Figure 6 and do the following:

1. Using the two vertical or horizontal wall-mounting holes, attach the wall clip to a wall using two screws (not provided).
2. Slide the module into the clip until the two holes on the bottom of the module align with the two holes on the lower flange of the clip.
3. Attach the module to the clip using the two Phillips pan head screws provided for the clip.

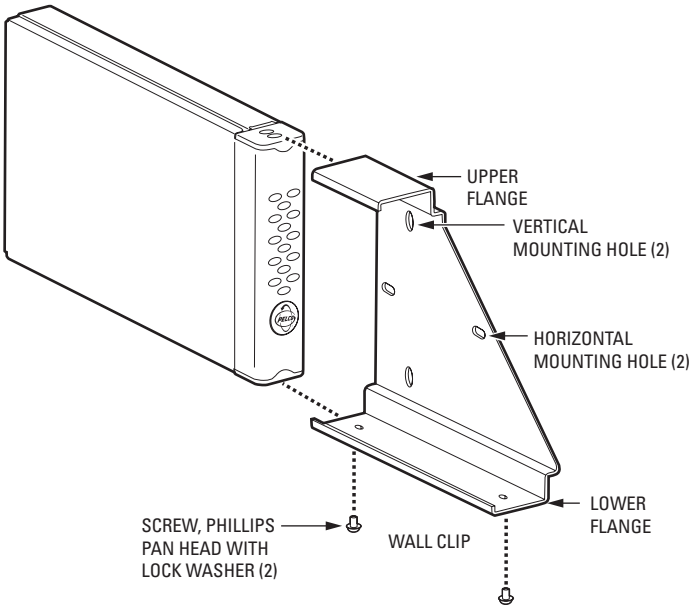


Figure 6. Mounting the FT106011 Transmitter/FR106011 Receiver Using the Wall Clip

CONNECTING THE TRANSMITTER/RECEIVER

Connections to the FT106011 transmitter and the FR106011 receiver are made on the rear panel of the modules (refer to Figure 7) and consist of the following:

- Power connection

  NOTES:

  – A 12 VDC or 24 VAC power supply can be used to power the transmitter/receiver when used as a stand-alone module. A 12 VDC power supply is provided. If a 24 VAC power supply is used, the power supply must be a Listed Direct Plug-In Power Unit marked as Class 2 and rated as 24 VAC, 200 mA (minimum output).

  – In extreme temperature conditions, it is recommended that an industrial-rated outdoor power supply be used.

- Fiber connection
- Contact closure connection
- Data connection
- Audio connection
- Video input connection (transmitter only)
- Video output connection (receiver only)

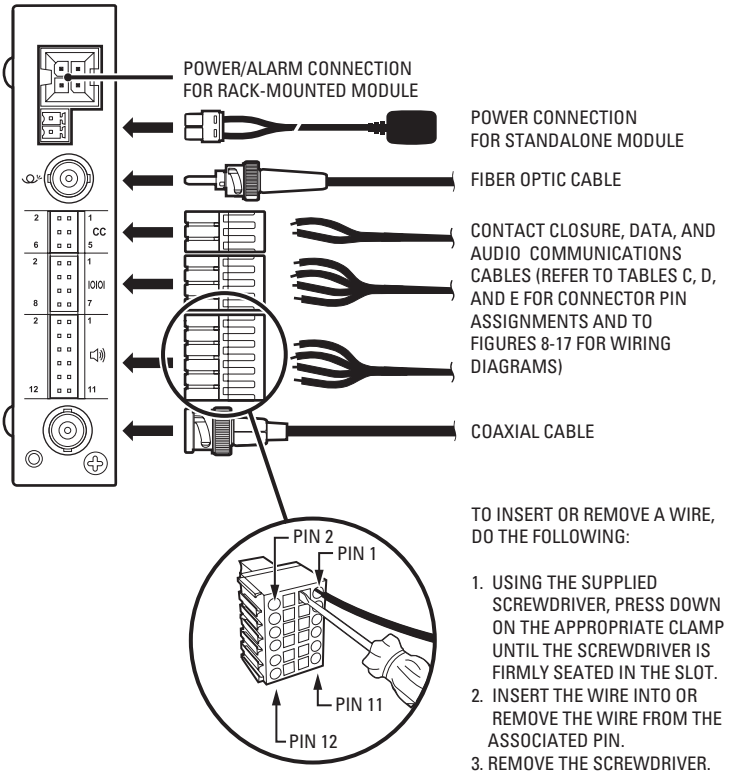


Figure 7. FT106011 Transmitter/FR106011 Receiver Connections

Table C. Contact Closure Pin Assignments

Pin Number	Contact Closure (CC)
1	In, Common
2	In
3 or 4	Out, Common
5	Out, Normally Open
6	Out, Normally Closed

Table D. Data Connector Pin Assignments

Pin Number	RS-232	RS-422	RS-485 2-Wire	RS-485 4-Wire	Manchester	Bi-Phase
1		TX+ (Out+)	T+/R+ (Out+/In+)	TX+ (Out+)	TX+ (Out+) (W)	TX+ (Out+)
2		TX-(Out-)	T-/R-(Out-/In-)	TX- (Out-)	TX- (Out-) (B)	TX- (Out-)
3	—	RX+ (In+)	—	RX+ (In+)	RX+ (In+) (W)	RX+ (In+)
4	—	RX- (In-)	—	RX- (In-)	RX- (In-) (B)	RX- (In-)
5	RX (In)	—	—	—	—	—
6	TX (Out)	—	—	—	—	—
7 or 8	Ground	—*	—*	—*	Shield	Shield

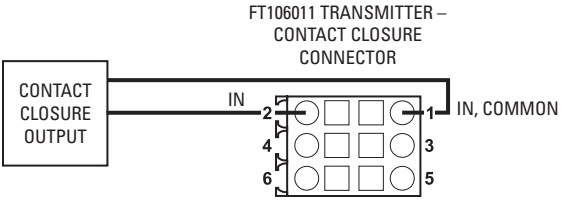
*Ground may be required based on conditions of installation. Refer to the current version of EIA/TIA-422 and EIA/TIA-485 standards for additional information.

NOTES:

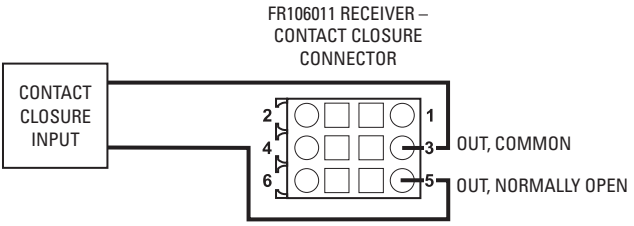
- TX (Out), TX+ (Out+), TX- (Out-), T+ (Out+), and T- (Out-) denote data output from the transmitter/receiver.
- RX (In), RX+ (In+), RX- (In-), R+ (In+), and R- (In-) denote data input to the transmitter/receiver.
- W denotes white wire, and B denotes black wire.
- Data ports are not terminated. For RS-422, RS-485 2-Wire, RS-485 4-Wire, Manchester, and Bi-Phase data signals, termination may be required based on conditions of installation. If termination is required, terminate the data signal at the endpoint of the data bus using a 120-ohm resistor.

Table E. Audio Connector Pin Assignments

Pin Number	Balanced	Unbalanced
1	In, Left+	—
2	In, Right+	—
3	In, Left-	—
4	In, Right-	—
5	—	In, Left
6	—	In, Right
7 or 8	—	Shield
9	Out, Left+	Out, Left
10	Out, Right+	Out, Right
11	Out, Left-	—
12	Out, Right-	—

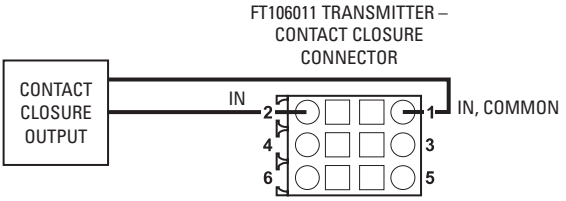


CONNECTIONS BETWEEN CONTACT CLOSURE OUTPUT AND FT106011 TRANSMITTER

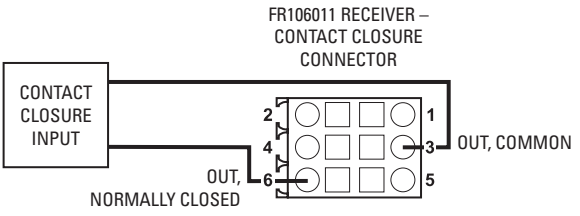


CONNECTIONS BETWEEN CONTACT CLOSURE INPUT AND FR106011 RECEIVER

Figure 8. Normally Open Contact Closure Wiring

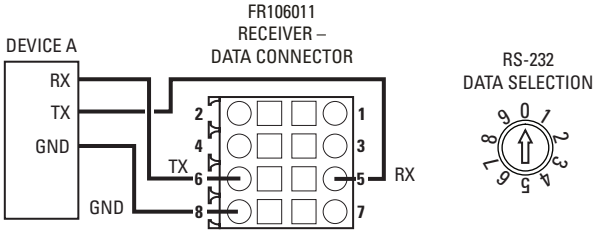


CONNECTIONS BETWEEN CONTACT CLOSURE OUTPUT AND FT106011 TRANSMITTER

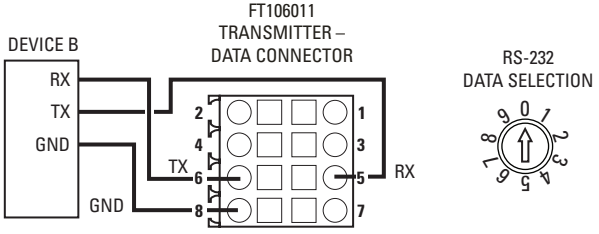


CONNECTIONS BETWEEN CONTACT CLOSURE INPUT AND FR106011 RECEIVER

Figure 9. Normally Closed Contact Closure Wiring

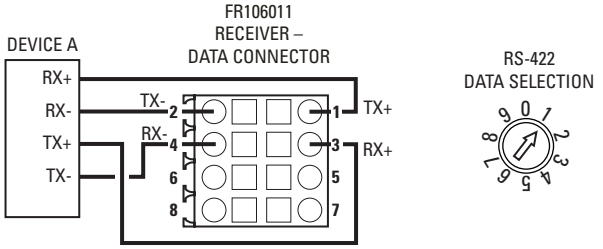


RS-232 DATA CONNECTIONS BETWEEN DEVICE A AND FR106011 RECEIVER

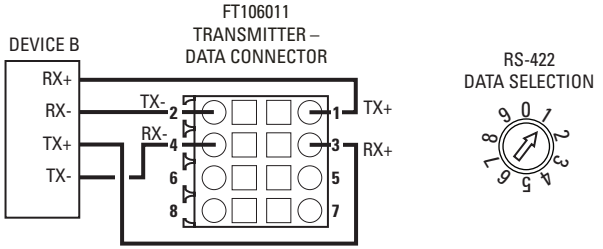


RS-232 DATA CONNECTIONS BETWEEN DEVICE B AND FT106011 TRANSMITTER

Figure 10. RS-232 Data Communication Wiring

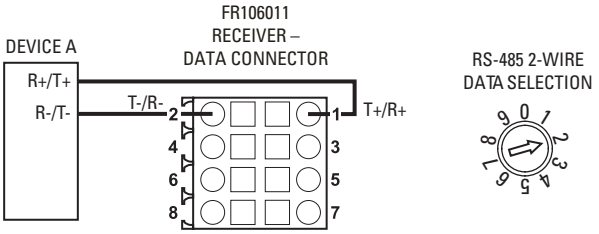


RS-422 DATA CONNECTIONS BETWEEN DEVICE A AND FR106011 RECEIVER

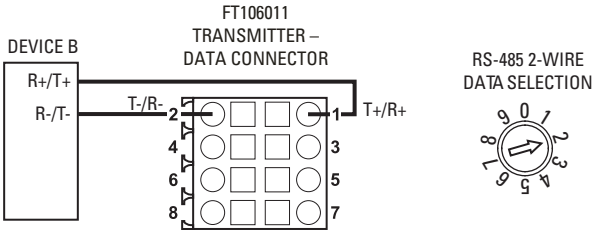


RS-422 DATA CONNECTIONS BETWEEN DEVICE B AND FT106011 TRANSMITTER

Figure 11. RS-422 Data Communication Wiring

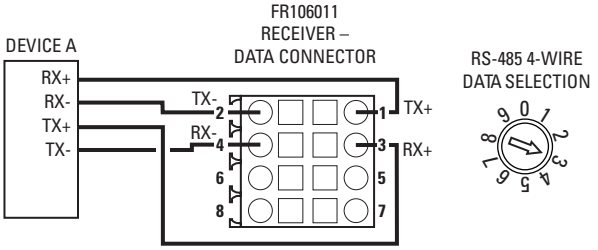


RS-485 2-WIRE DATA CONNECTIONS BETWEEN DEVICE A AND FR106011 RECEIVER

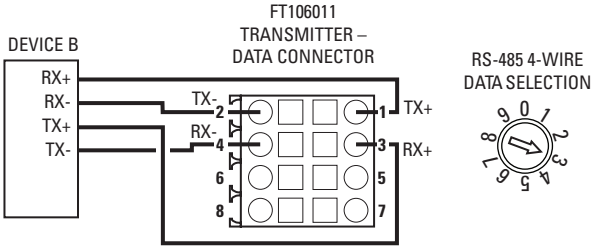


RS-485 2-WIRE DATA CONNECTIONS BETWEEN DEVICE B AND FT106011 TRANSMITTER

Figure 12. RS-485 2-Wire (Half Duplex) Data Communication Wiring

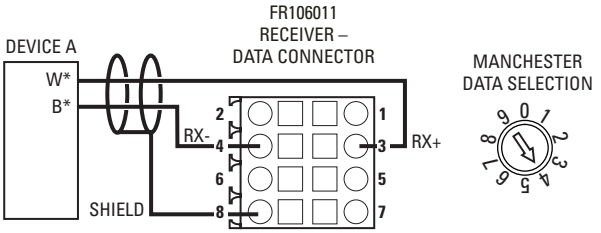


RS-485 4-WIRE DATA CONNECTIONS BETWEEN DEVICE A AND FR106011 RECEIVER

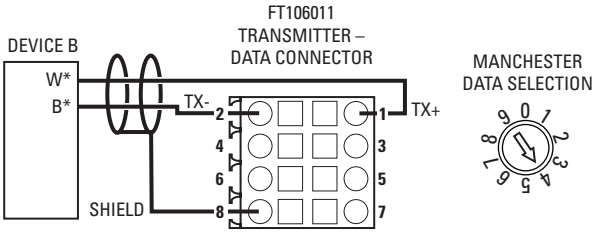


RS-485 4-WIRE DATA CONNECTIONS BETWEEN DEVICE B AND FT106011 TRANSMITTER

Figure 13. RS-485 4-Wire (Full Duplex) Data Communication Wiring



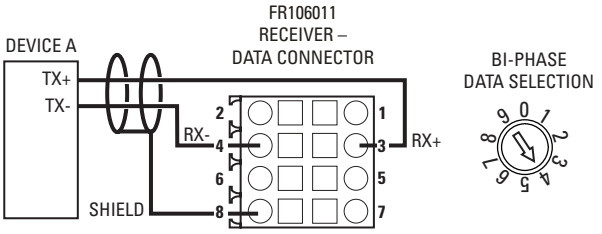
MANCHESTER DATA CONNECTIONS BETWEEN DEVICE A AND FR106011 RECEIVER



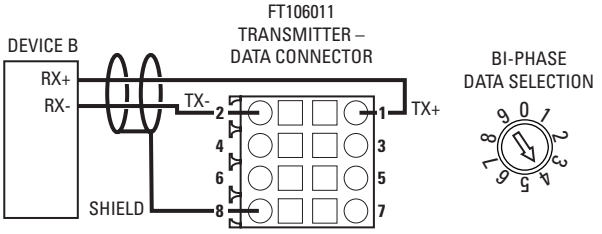
MANCHESTER DATA CONNECTIONS BETWEEN DEVICE B AND FT106011 TRANSMITTER

*W DENOTES WHITE WIRE, AND B DENOTES BLACK WIRE.

Figure 14. Manchester Data Communication Wiring

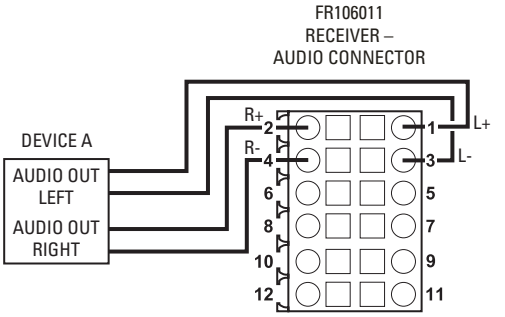


BI-PHASE DATA CONNECTIONS BETWEEN DEVICE A AND FR106011 RECEIVER

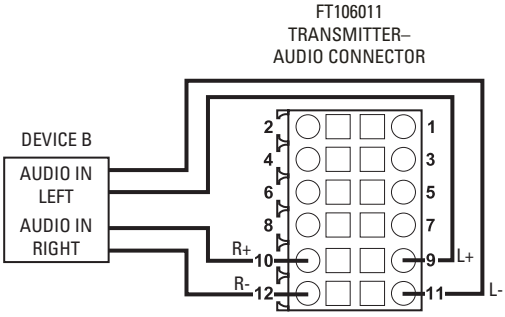


BI-PHASE DATA CONNECTIONS BETWEEN DEVICE B AND FT106011 TRANSMITTER

Figure 15. Bi-Phase Data Communication Wiring

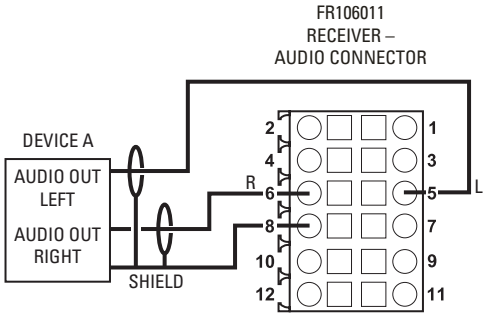


BALANCED AUDIO CONNECTIONS BETWEEN DEVICE A AND FR106011 RECEIVER

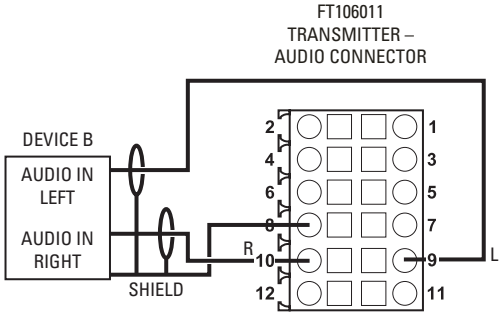


BALANCED AUDIO CONNECTIONS BETWEEN DEVICE B AND FT106011 TRANSMITTER

Figure 16. Balanced Audio Wiring



UNBALANCED AUDIO CONNECTIONS BETWEEN DEVICE A AND FR106011 RECEIVER



UNBALANCED AUDIO CONNECTIONS BETWEEN DEVICE B AND FT106011 TRANSMITTER

Figure 17. Unbalanced Audio Wiring

Troubleshooting

LED indicators on the front panel of the FT106011 transmitter/FR106011 receiver (refer to Figure 2) allow you to monitor signal status, laser status, data activity, contact closure activation, and operating power. Table F provides information about the front-panel indicators and associated troubleshooting guidelines.

Table F. Troubleshooting with Front-Panel Indicators

Indicator Color	Meaning	Possible Cause	Corrective Action
Power LED (Pelco badge)			
Blue	Power is being applied to the module.	–	No action required.
Not lit	Power is not being applied to the module.	Power connection is faulty.	Check power connection. If module is rack mounted, reseat module or power supply as necessary.
		Power supply has failed.	Replace power supply.
		Loss of power occurs due to tripped circuit breaker(s), blown fuse(s), or faulty electrical service.	Check circuit breaker(s), fuse(s), or electrical service as necessary.
Contact Closure LED (CC)			
Amber	Contact is closed.	–	No action required.
Not lit	Contact is open.	–	No action required.
		Connections are faulty.	Check connections.

(Continued on next page)

Table F. Troubleshooting with Front-Panel Indicators (Continued)

Indicator Color	Meaning	Possible Cause	Corrective Action
Audio Present LED (🔊)			
Green	Audio is being transmitted onto the fiber by the audio port or is being received from the fiber by the audio port.	–	No action required.
Red	The Audio Select switch is set to an invalid position.	The Audio Select switch is set to any of the following positions: 2, 3, 4, 5, 6, 7, 8, or 9.	Ensure that the Audio Select switch is set to position 0 or 1 as desired (refer to the *Setting the Audio Signal and Impedance Mode* section for detailed information).
Intermittent red	An audio overload condition exists.	The audio input level exceeds 3.0 Vp-p.	Lower the audio input level.
Not lit	Audio is not being transmitted onto the fiber by the data port or is not being received from the fiber by the data port.	Audio is not present on the channel.	No action required.
		Audio connection is faulty.	Check audio connections.
		Cable is defective.	Replace cable.

(Continued on next page)

Table F. Troubleshooting with Front-Panel Indicators (Continued)

Indicator Color	Meaning	Possible Cause	Corrective Action
Data Activity LED (IOIOI)			
Flashing amber	Data is being transmitted onto the fiber by the data port or is being received from the fiber by the data port.	–	No action required.
Red	The Data Select switch is set to an invalid position.	The Data Select switch is set to position 6, 7, 8, or 9.	Ensure that the Data Select switch is set to the correct position (refer to the *Setting the Data Communication Mode* section for detailed information).
Not lit	Data is not being transmitted onto the fiber by the data port or is not being received from the fiber by the data port.	Data is not present on the channel.	No action required.
		Data connection is faulty.	Check data connections.
		Data communication cable is defective.	Replace cable.

(Continued on next page)

Table F. Troubleshooting with Front-Panel Indicators (Continued)

Indicator Color	Meaning	Possible Cause	Corrective Action
Video Present LED (1 or 1)			
Green	Incoming video signal is present on the channel.	—	No action required.
Red on transmitter	Incoming video signal is not present on the channel.	Video source is not powered on.	Check power connection to the video source.
		Video source is not connected to the transmitter.	Check BNC connections.
		Coaxial cable is defective.	Replace cable.
Red on receiver	Incoming video signal is not present on the channel.	Optical signal is not being received from the transmitter. Optic Fault LED is also red.	Refer to the *Optic Fault LED* section in this table.
		Video source is not powered on.	Check power connection to the video source.
		Video source is not connected to the transmitter.	Check BNC connections.
		Coaxial cable connected to the transmitter is defective.	Replace cable.

(Continued on next page)

Table F. Troubleshooting with Front-Panel Indicators (Continued)

Indicator Color	Meaning	Possible Cause	Corrective Action
Optic Fault LED ( )			
Green	The optical signal is being received and laser is operating properly.	–	No action required.
Red	The optical signal is not being received.	Remote fiber module is not powered on.	Check power connections. Replace power supply if necessary.
		Fiber optic cable is not connected.	Check fiber optic connections.
		Fiber optic cable connectors are dirty or are damaged.	Clean, polish, or replace fiber optic cable connectors as necessary.
		Fiber optic cable is defective.	Replace cable.
		A problem exists with the optical power budget.	Verify that losses in fiber optic cable do not exceed the optical power budget specification of the fiber optic link. If the losses do exceed the optical power budget, contact Product Support.
Flashing red	Laser has shut down.	Fiber module is operating in extreme conditions; for example, operating temperature is below or above recommended range as stated in the the *Specifications* section.	Ensure that fiber module operates according to operating conditions stated in the *Specifications* section, and then cycle the power. If problem persists, contact Product Support.
		Laser has reached end of life.	Cycle the power. If problem persists, contact Product Support.

Specifications

VIDEO

Number of Channels	1
Modulation Type	Pulse code modulation, 10-bit resolution
Video Input (FT106011)/ Video Output (FR106011)	1.0 Vp-p, 75 ohms, NTSC, PAL, and SECAM
Bandwidth	6.5 MHz
Gain	Unity
Differential Gain	<1%
Differential Phase	<0.7°
Tilt	<1%
Signal-to-Noise Ratio	>70 dB (CCIR weighted)

AUDIO

Number of Channels	2
Audio Input (FT106011/ Audio Output (FR106011)	2.9 Vp-p maximum
Input Impedance	600 ohms or 47K ohms, switch-selectable
Input/Output Connection	Balanced (600 ohms) or unbalanced (47K ohms)
Bandwidth	20 kHz
Total Harmonic Distortion	<0.02%
Signal-to-Noise Ratio	>87 dB

DATA

Number of Channels	1
Data Communication	RS-232, RS-422, RS-485 (2-wire/4-wire), Manchester, Bi-Phase, Coaxitron
Maximum Baud Rate	500 kbps

CONTACT CLOSURE

Number of Channels	1
Input	Active low
Output	30 VDC, 1 A maximum Choice of normally open or normally closed

GENERAL

Operating Temperature	-40° to 167°F (-40° to 75°C)
Input Power Requirements	12 VDC or 24 VAC, 350 mA
LED Indicators	Power Video Present Audio Present Data Activity Contact Closure Activation Optic Fault

Dimensions	8.75" D x 1.08" W x 4.81" H (22.23 x 2.74 x 12.22 cm)
Unit Weight	1.6 lb (0.73 kg)

MECHANICAL

Connectors	
Rack Power/Alarm	4-pin connector
Stand-Alone Power	2-pin connector, screw terminals
Video	BNC
Audio	12-pin connector, tension clamps
Data	8-pin connector, tension clamps
Contact Closure	6-pin connector, tension clamps
Fiber Optic	ST for multimode fiber ST or FC for single-mode fiber

OPTICAL POWER BUDGET, TRANSMISSION DISTANCE, AND LASER CLASS 1 LIMIT

Transmitter	Compatible Receiver	Wavelength	Optical Power Budget	Maximum Transmission Distance	Laser Class 1 Limit*
Multimode (62.5/125 µm)					
FT106011MSTR	FR106011MSTR	1310 nm	22 dB†	6 km (3.7 mi)‡	<15.6 mW
		850 nm	22 dB†	6 km (3.7 mi)‡	<0.78 mW
Single-Mode (9/125 µm)					
FT106011SSTR	FR106011SSTR	1310 nm	24 dB	38 km (23.6 mi)§	<15.6 mW
		1550 nm	24 dB	38 km (23.6 mi)§	<10.0 mW
FT106011SFCR	FR106011SFCR	1310 nm	24 dB	38 km (23.6 mi)§	<15.6 mW
		1550 nm	24 dB	38 km (23.6 mi)§	<10.0 mW

*The FT106011 transmitter/FR106011 receiver is classified by the FDA as a Class 1 laser product.

†When using 50/125 µm multimode fiber, subtract 3 dB from the optical power budget.

‡Maximum transmission distance is limited by fiber bandwidth.

§Maximum transmission distance is based on attenuation of 0.5 dB/km plus a 5 dB buffer for connector and splice losses.

NOTES:

- For conformal coated models, replace the first letter *F* in the model number with the letter *C*. The conformal coated version of FT106011MSTR, for example, is CT106011MSTR.
- For models with higher optical power budgets, contact the factory.

Green The materials used in the manufacture of this document and its components are compliant to the requirements of Directive 2002/95/EC.

This equipment contains electrical or electronic components that must be recycled properly to comply with Directive 2002/96/EC of the European Union regarding the disposal of waste electrical and electronic equipment (WEEE). Contact your local dealer for procedures for recycling this equipment.

PRODUCT WARRANTY AND RETURN INFORMATION

WARRANTY

Pelco will repair or replace, without charge, any merchandise proved defective in material or workmanship **for a period of one year** after the date of shipment.

Exceptions to this warranty are as noted below:

- Five years on fiber optic products and TW3000 Series unshielded twisted pair transmission products.
- Three years on Spectra® IV products.
- Three years on Genex® Series products (multiplexers, server, and keyboard).
- Three years on Camclosure® and fixed camera models, except the CC3701H-2, CC3701H-2X, CC3751H-2, CC3651H-2X, MC3651H-2, and MC3651H-2X camera models, which have a five-year warranty.
- Three years on PMCL200/300/400 Series LCD monitors.
- Two years on standard motorized or fixed focal length lenses.
- Two years on Legacy®, CM6700/CM6800/CM9700 Series matrix, and DF5/DF8 Series fixed dome products.
- Two years on Spectra III™, Esprit®, ExSite™, and PS20 scanners, including when used in continuous motion applications.
- Two years on Esprit and WW5700 Series window wiper (excluding wiper blades).
- Two years (except lamp and color wheel) on Digital Light Processing (DLP®) displays. The lamp and color wheel will be covered for a period of 90 days. The air filter is not covered under warranty.
- Eighteen months on DX Series digital video recorders, NVR300 Series network video recorders, and Endura™ Series distributed network-based video products.
- One year (except video heads) on video cassette recorders (VCRs). Video heads will be covered for a period of six months.
- Six months on all pan and tilts, scanners or preset lenses used in continuous motion applications (that is, preset scan, tour and auto scan modes).

Pelco will warrant all replacement parts and repairs for 90 days from the date of Pelco shipment. All goods requiring warranty repair shall be sent freight prepaid to Pelco, Clovis, California. Repairs made necessary by reason of misuse, alteration, normal wear, or accident are not covered under this warranty.

Pelco assumes no risk and shall be subject to no liability for damages or loss resulting from the specific use or application made of the Products. Pelco's liability for any claim, whether based on breach of contract, negligence, infringement of any rights of any party or product liability, relating to the Products shall not exceed the price paid by the Dealer to Pelco for such Products. In no event will Pelco be liable for any special, incidental or consequential damages (including loss of use, loss of profit and claims of third parties) however caused, whether by the negligence of Pelco or otherwise.

The above warranty provides the Dealer with specific legal rights. The Dealer may also have additional rights, which are subject to variation from state to state.

If a warranty repair is required, the Dealer must contact Pelco at (800) 289-9100 or (559) 292-1981 to obtain a Repair Authorization number (RA), and provide the following information:

1. Model and serial number
2. Date of shipment, P.O. number, Sales Order number, or Pelco invoice number
3. Details of the defect or problem

If there is a dispute regarding the warranty of a product which does not fall under the warranty conditions stated above, please include a written explanation with the product when returned.

Method of return shipment shall be the same or equal to the method by which the item was received by Pelco.

RETURNS

In order to expedite parts returned to the factory for repair or credit, please call the factory at (800) 289-9100 or (559) 292-1981 to obtain an authorization number (CA number if returned for credit, and RA number if returned for repair).

All merchandise returned for credit may be subject to a 20% restocking and refurbishing charge.

Goods returned for repair or credit should be clearly identified with the assigned CA or RA number and freight should be prepaid. Ship to the appropriate address below.

If you are located within the continental U.S., Alaska, Hawaii or Puerto Rico, send goods to:

Service Department
Pelco
3500 Pelco Way
Clovis, CA 93612-5699

If you are located outside the continental U.S., Alaska, Hawaii or Puerto Rico and are instructed to return goods to the USA, you may do one of the following:

If the goods are to be sent by a COURIER SERVICE, send the goods to:

Pelco
3500 Pelco Way
Clovis, CA 93612-5699 USA

If the goods are to be sent by a FREIGHT FORWARDER, send the goods to:

Pelco c/o Expeditors
473 Eccles Avenue
South San Francisco, CA 94080 USA
Phone: 650-737-1700
Fax: 650-737-0933

REVISION HISTORY

Manual #	Date	Comments
C2649M	9/07	Original version.

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